It is difficult to say what place this form of treatment should have, but even its more enthusiastic advocates are reluctant to employ it in serious cases owing to the uncertainty of its effects.

Local Administration

There are many ways in which penicillin may usefully be applied to the actual site of infection. Besides being a chemotherapeutic agent, it has all the properties of the ideal antiseptic, killing or preventing the growth of susceptible bacteria without doing the slightest harm to tissue. Local application may be indicated for its simplicity and economy, because the area concerned can be reached in no other way, or in order to attain a high concentration there which will persist for some time. The following are the more important examples.

Intrathecal Injection.—Only traces of penicillin reach the cerebrospinal fluid from the blood unless enormous doses are given intramuscularly. Meningitis should therefore be treated by intrathecal injection as well as intramuscular. Pure (" white ") sodium penicillin should be used, and the solution should be prepared freshly with the strictest aseptic precautions and with no preservative such as phenol. A dose of 10,000 units will maintain an adequate level for 24 hours. Unless there is a block, remarkably uniform diffusion occurs throughout the central nervous system from an injection given by the lumbar route.

Serous Sacs, Joints, and Abscesses.—Penicillin solution may with advantage be injected into an empyema cavity, a joint affected by suppurative arthritis, or abscess cavities elsewhere, the dose depending on the size of the cavity : as much as 100,000 units may be indicated for a large empyema. Absorption from such an area is slow, and penetration into it from the blood equally or more so ; this is therefore not only a convenient but the only way of keeping up a high concentration in such a collection of fluid for a whole day or more. If the dose is large, slow absorption will also maintain a systemic effect, to some extent taking the place of intramuscular injections. This is not the place (nor am I the person) to discuss the surgical treatment of these conditions further than to say that penicillin does not necessarily remove the need for it.

Carbuncle can be treated very successfully by injecting penicillin into and around it. Even though the solution also contains procaine, this is a painful proceeding, but may be well worth while to accelerate resolution.

Wounds.—One way of preventing infection in a recent wound is to dust it with a powder containing penicillin. The usual diluent is a sulphonamide (preferably sulphathiazole), and the procedure has been objected to on account of the risk of causing sensitization. Established sepsis in superficial wounds and burns, if due to a demonstrably sensitive organism, may be treated similarly, or by the spraying of a solution or the application of a cream. These last two methods are applicable, under the same condition, to the treatment of infections of the skin. Among other superficial infections, conjunctivitis may be treated by drops frequently applied or by lamellae.

Upper Air Passages.—Infections of the main nasal cavity (it being remembered that the sinuses are generally inaccessible to such measures) can be treated either with a spray or, probably better, by the frequent use of a snuff containing 5,000 units of calcium penicillin per gramme of sulphathiazole. This has been particularly successful in clearing up nasal carrier conditions ; and, owing to the backward flow of mucus in the nose, it has also an effect on the nasopharynx and even the throat.

Local treatment of the throat and mouth is best carried out with gelatin pastilles, one of which should be kept in the buccal sulcus throughout the day. Solution is slow, and replacement necessary at intervals of not less than an hour. The official trochiscus penicillinae of the *B.P.*, a tablet with a lactose base, is less satisfactory. The choice of this product was dictated by the greater stability of penicillin in a dry form, but gelatin pastilles are now obtainable which retain the greater part of their activity for months ; alternatively, they can easily be made fresh by a pharmacist. Penicillin chewing-gums are also suitable for this type of use if the patient will persist with them.

Infections of the bronchi and lungs may be treated by inhalation, a small volume of concentrated solution containing, say, 100,000 units being administered by a Collison or other inhaler several times a day. There is some absorption by this route : thus a large enough dose will also exert a systemic effect. The inhalation of a fine powder of penicillin, recently advocated in the U.S.A., has not apparently been adopted in this country, and seems likely to be more disagreeable to the patient than a liquid spray.

PHARMACY AND POISONS ACT, 1933

The Poisons List Order, 1950 (S.I. 1950, No. 1213) and the Poisons Rules, 1950 (S.I. 1950, No. 1214), which were made by the Secretary of State on July 21, come into operation on September 1. These Statutory Instruments make the following changes in the Poisons List and the Poisons Rules, 1949, hereafter called the Principal Rules.

Part I of the Poisons List and the First Schedule to the Principal Rules.—The following substances are added: Alphaprodine; its salts. The following antihistamine substances and their salts: antazoline, diphenhydramine, 3-di-*n*-butylaminomethyl-4 : 5 : 6-trihydroxyphthalide, phenindamine, substances being tetra-substituted N derivatives of ethylenediamine or propylenediamine. Betaprodine; its salts. Di-isopropyl fluorophosphonate. Hydroxypethidine; its salts. Isoamidone; its salts. Ketobemidone; its salts. Methadol; its salts. Methadyl acetate; its salts. Polymethylenebistrimethylammonium salts. The following items are amended: Amidone (DL-2-dimethylamino-4 : 4-diphenylheptane-5-one); its salts. The chemical description is omitted and the entry now reads: " Amidone; its salts." The item " 6-morpholino-4 : 4-diphenylheptane-3-one; its salts," which describes the poison now known as phenadoxone is omitted, and after the item " Pethidine; its salts; " there is inserted " Phenadoxone; its salts."

The Third Schedule to the Principal Rules.—Antihistamine substances and their salts are added to Group II of this Schedule and are thereby exempted from the requirements of the Pharmacy and Poisons Act and the Principal Rules when in the form of " preparations intended for external application only."

The Fourth Schedule to the Principal Rules.—Antihistamine substances and their salts, other than the preparations exempted by inclusion in Group II of the Third Schedule, and polymethylenebistrimethylammonium salts are added to this Schedule. The item " 6-morpholino-4 : 4-diphenylheptane-3-one; its salts " is deleted from this Schedule. This poison (under the name phenadoxone) is now subject to control under the Dangerous Drugs law.

The Seventh Schedule to the Principal Rules.—At the end of this Schedule the following paragraph is added: To be labelled with the words " Caution. This preparation should be administered only under medical supervision. The vapour is dangerous ": Medicines made up ready for the internal or external treatment of human ailments and containing di-isopropyl fluorophosphonate.

Rules 7 and 12 of the Principal Rules.—These Rules are amended to provide that when a poison is supplied in ampoules the " signed order " or prescription may state either the total amount to be supplied (as at present) or the total amount intended for administration or injection.

Rule 16 and the Thirteenth Schedule to the Principal Rules.—In paragraph (*e*) of the proviso to this Rule and in the Schedule the description " executive officer " is replaced by the description " county agricultural officer or assistant county agricultural officer."

Copies of the Poisons List Order and of the Poisons Rules may be obtained from H.M. Stationery Office or through any bookseller.